

CLAIMS

WHAT IS CLAIMED IS:

1. A controller for controlling a plurality of motors in a fluid handling system, comprising:
 - a connector input/output port that communicates with at least one sensor in the fluid handling system to obtain sensor data;
 - at least one digital signal processor (DSP) and gate driver interface that evaluates the sensor data and generates a control signal based on the sensor data; and
 - at least one commutation module in communication with said at least one DSP and gate driver interface, wherein said at least one commutation module controls at least one motor based on the control signal.
2. The controller of claim 1, wherein each DSP and gate driver interface has a corresponding commutation module.
3. The controller of claim 1, wherein each of said plurality of motors has a corresponding DSP and gate driver interface and a corresponding commutation module.
4. The controller of claim 1, wherein at least one of said plurality of motors shares one DSP and gate driver interface and one motor commutation module.
5. The controller of claim 1, wherein at least one of said plurality of motors is a binary-function motor, and wherein the controller further comprises a miscellaneous control function card to control said at least one binary-function motor.
6. The controller of claim 5, wherein at least one of said plurality of motors is a variable speed motor, and wherein said at least one commutation module controls at least one variable-speed motor.

7. The controller of claim 1, further comprising a local power supply that can power the motors.

8. The controller of claim 7, wherein the local power supply is a DC backup power supply, and wherein said at least one DSP and gate driver switches to the DC backup power supply to supply power to said at least one motor in the event of a main power failure.

9. An integrated fluid handling system, comprising:
a plurality of motors;
a plurality of devices associated with said plurality of motors;
a plurality of sensors that generate sensor data corresponding to the operation of said plurality of devices;
a multi-motor controller that controls said plurality of motors, the multi-motor controller having
a connector input/output port that communicates with at least one sensor in the fluid handling system to obtain sensor data from said plurality of sensors,
a plurality of digital signal processor (DSP) and gate driver interfaces that evaluate the sensor data from said plurality of sensors and generate a control signal based on the sensor data, and
a plurality of commutation modules, each commutation module corresponding to one of said plurality of DSP and gate driver interfaces, wherein each commutation module controls at least one motor based on the control signal.
10. The system of claim 9, wherein each of said plurality of motors has a corresponding DSP and gate driver interface and a corresponding commutation module.
11. The system of claim 9, wherein at least one of said plurality of motors shares one DSP and gate driver interface and one motor commutation module.
12. The system of claim 9, wherein at least one of said plurality of motors is a binary-function motor, and wherein the controller further comprises a miscellaneous control function card to control said at least one binary-function motor.
13. The system of claim 9, wherein at least one of said plurality of motors is a variable speed motor, and wherein said at least one commutation module controls at least one variable speed motor.

14. The system of claim 9, further comprising a local DC power supply that acts as a backup power supply to power said plurality of motors, and wherein the plurality of DSP and gate drivers switch to the DC backup power supply to power at least one motor in the event of a main power failure.

15. The system of claim 9, further comprising a system controller that controls operation of the plurality of motors according to an instruction from the multi-motor controller.

16. The system of claim 15, wherein the system controller is connected to the multi-motor controller via a connector selected from the group consisting of a serial connector or an Ethernet connector.

17. The system of claim 15, wherein the system comprises a plurality of multi-motor controllers that are connected to the system controller.